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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/616,757   | 07/10/2003  | Edgar Alan Duncan    | 1273-002            | 2297             |
| 4678   | 7590        | 03/28/2005           | EXAMINER            |                  |
| MACCORD MASON PLLC<br>300 N. GREENE STREET, SUITE 1600<br>P. O. BOX 2974<br>GREENSBORO, NC 27402 |             |                      | NGUYEN, TAI T       |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2632                |                  |

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/616,757

Applicant(s)

DUNCAN ET AL.

Examiner

Tai T. Nguyen

Art Unit

2632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>07/10/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 30-37 are objected to because of the following informalities: Claims 30-37 depend on non-existent claims 38 and 44. It appears that claims 30-37 should depend on claim 29. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 14 are rejected under 35 U.S.C. 112, second because "about" is used in claims that makes claims 4 and 5 undefined.

*The term "about" used to define the area of the lower end of a mold as between 25 to about 45% of the mold entrance was held to be clear, but flexible. Ex parte Eastwood, 163 USPQ 316 (Bd. App. 1968). Similarly, in W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), the court held that a limitation defining the stretch rate of a plastic as "exceeding about 10% per second" is definite because infringement could clearly be assessed through the use of a stopwatch. However, the court held that claims reciting "at least about" were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term "about." Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18USPQ2d 1016 (Fed. Cir. 1991).*

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 29-30 are rejected under the judicially created doctrine of double patenting over claims 1-2 of U. S. Patent No. 6,621,417 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: both present invention and patent disclose the same field of invention that is locating/detecting above ground utility object, generating an alert when the object is sensed, and decreasing the forward progress of the machine when the alert is observed.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-19, 25-26, 28-30, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stump et al. (U.S. Pat. 5,819,859) in view of Bashforth et al. (U.S. Pat. 5,499,029).

**Regarding to claim 1**, Stump et al. disclose a system/method for detecting an underground structure comprising:

at least one transponder (20), which is capable of being tagged to at least one utility object (22), for radio frequency communication with an radio frequency scanner/receiver (54, 56), wherein the radio frequency scanner/receiver (54, 56) also communication with a control head (28, as shown in Figures 1-2; col. 3, lines 28-67 and col. 4, lines 1-57);

wherein the at least one transponder (20) includes a radio frequency identification transponder that transmits information relating to the location of the hidden object (22);

the RF scanner/receiver (54, 56) includes at least one antenna and an RF interrogator; and the control head (12) includes at least one microprocessor (60, as shown in Figures 1-2; col. 3, line 28 through col. 5, line 12 and col. 20, lines 5-19).

Stump et al. fail to disclose the radio frequency scanner/receiver (54, 56) and control head (28) being powered directly by a power source, radio frequency scanner/receiver (54, 56) and control head (28) movable mounted on a mobile machine. Since Stump et al. disclose wheels (29) those are provided to enhance portability of the control head (28, as shown in Figure 2; col. 4, lines 32-39), Therefore, it would have been obvious to a person having ordinary skill in the art that those devices can be movable mounted to a mobile machine in order to have a convenience when moving along in a wide area and using the vehicle power to supply power to the radio frequency scanner/receiver (54, 56) and control head (28) to enable those devices to operate.

Stump et al. fail to disclose a user interface. Bashforth et al. disclose a wide band stepped frequency ground penetrating radar that teach a user interface (52) thereby providing the operator of the machine an adequate alert on display (50) when the machine comes in proximity of one of the at least one transponder and allowing the operator of the machine to avoid the at least one object tagged by the respective transponder (54, as shown in Figure 1; col. 4, line 62 through col. 9, line 22). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to utilize the user interface as taught by Bashforth et al into the system as disclose by Stump et al. in order to make the apparatus and method for detecting an underground structure more effective to apply to the present invention because it provides an adequate alert to an operator of the machine when the machine (28) comes in proximity one of the transponder (20) that enable the operator avoid damaging the object.

Lastly, Stump et al. fail to disclose the system/method for detection a hidden object above ground fixed utility object. Since Stump et al. disclose the system/method using RF signal to detect an underground object, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to know that the system of Stump et al. also can be used to detect a hidden above ground object by using the RF signal.

**Regarding to claim 2,** Stump et al. disclose the instant claimed invention except for providing to the user approximately two seconds response time prior to physically contact the object. Since Stump et al. disclose the radio frequency scanner/receiver (54, 56) emits a probe signal (36) to the transponder (20) and receives a signature signal (38) from the transponder (20, as shown in Figure 1), it would have been obvious to a person having ordinary skill in the art that the system would provide to the user approximately couple seconds response time period to physically contacting the utility object for the purpose of reducing vehicle speed in order to avoiding collision with the object.

**Regarding to claims 3-4 and 14-15,** Since Stump et al. disclose the probe signal emits from the scanner (54) of 100 MHZ (col. 8, lines 6-11) and Bashforth et al. disclose the communication between the radio frequency scanner/receiver (14) and the transponder (54) using radio frequency, wherein the RF source (16) linearly steps from 100 MHZ to 1,000 MHZ and the data is taken at 451 frequencies through this 900 MHZ bandwidth at 2.0 MHZ step interval (col. 5, lines 7-45), it would have been obvious to a person having ordinary skill in the art that the RFID can be operated at a frequency

range of between about 13.5MHz and 2.45Ghz and the frequency band of about 915 MHZ because it is just an obvious design choice in order to have a better penetrating ability.

**Regarding to claims 5-13,** As shown in Figure 1, Stump et al. disclose the radio frequency scanner/receiver (54, 56) having scanner (54) which is a microwave antenna for transmitting microwave probe signals and the receiver (56) including an array of antennae, those are used for communication with the transponder (20) using radio frequency. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use either one of these antennae for communicating purpose because all of these antennae are well-know in the art.

**Regarding to claims 16-18,** Bashforth et al. teach that the operator can control the ground penetrating radar system (10) by means of user interface (52) to produce information on the display (50), wherein the information including the presence, size, depth, distance and characteristics of the transponder (54) buried beneath the ground (col. 3, line 65 through col. 4, line 24 and col. 9, lines 14-28).

**Regarding to claim 19,** As mentioned in claim 16-18 above, Bashforth et al. disclose that operator can control the ground penetrating radar system (10) to detect buried objects, which may be underground storage tank by means of user interface (52) to produce information on the display (50), wherein the information including the presence, size, depth, distance and characteristics of the transponder (54) buried beneath the ground (col. 3, line 65 through col. 4, line 24 and col. 9, lines 14-28).

**Regarding to claims 25-26,** Bashforth et al. disclose the instant claimed invention except for the system including a GPS locator for providing the location of the machine, wherein the processor uses the data from the GPS locator and the RFID to computer the distance and direction of the RFID from the machine. Stump et al. teach a geographic recording system (150) communicates with a central processor (152) of the probing detection unit (28), relaying the precise location of the cooperative target (20) detected by the probing detection unit (28), wherein a global positioning system (170) is employed to provide position data for the geographic recording system (150) for purposes of determining position displacement of a cooperative target (20) and an underground object (22, as shown in Figure 15; col. 17, line 4 through col. 18, line 19). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to utilize the GPS locator (170) as taught by Stump et al. into the system as disclose by Bashforth et al. in order to make the system more effective to apply to the present invention because GPS locator (170) and processor (152) can be operated to provide the precise location of the object on the display.

**Regarding to claim 28,** Refer to claim 1 above.

**Regarding to claims 29 and 30,** the claimed method steps being interpreted and rejected as the apparatus claim 1 stated above.

**Regarding claim 32,** the claimed method steps would have been inherent in the product structure as stated in claim 26 above.

**Regarding claim 33,** the claimed method steps would have been inherent in the product structure as stated in claim 19 above.

**Regarding claim 34**, the claimed method steps would have been inherent in the product structure as stated in claim 2 above.

8. Claims 20-22 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stump et al. (U.S. Pat. 5,819,859) in view of Bashforth et al. (U.S. Pat. 5,499,029) as applied to claim 1 above, and further in view of Zimmermann et al. (U.S. Pat. 3,836,842).

**Regarding to claims 20 and 22**, Stump et al. disclose the instant claimed invention except for the sensory alarm to alert the user when an RFID is detected. Zimmermann et al. teach a marking device (1) placed adjacent the facilities and provided a satisfactory detectable upon the operating of an interrogating instrument, wherein the interrogating instrument including a loud speaker (39) which sounds an audible alarm when the presence of the marking device (1) is detected (as shown in Figures 1-2; col. 5, line 49 through col. 8, line 24). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to utilize the loud speaker as taught by Zimmermann et al. into the system as disclose by Bashforth et al. in order to make the wide band stepped frequency ground penetrating radar more effective to apply to the present invention because it generate an audible alarm to indicate that the presence of RFID is detected in addition with a display (50).

**Regarding to claim 21**, Zimmermann et al. also teach that the sensory alarm is a visual alarm (61, as shown in Figure 3; col. 9, lines 9-15).

**Regarding claims 35-37**, the claimed method steps would have been inherent in the product structure as stated in claims 20-22 above.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stump et al. (U.S. Pat. 5,819,859) in view of Bashforth et al. (U.S. Pat. 5,499,029) as applied to claim 1 above, and further in view Parkinson et al. (U.S. Pat. 5,430,379).

**Regarding to claim 23**, Stump et al. disclose the instant claimed invention except for the user interface provides a test function. Parkinson et al. teach a knob (32) having five settings, wherein one of those is a battery test setting, that would activate an audible alarm if the battery were low (as shown in Figure 4; col. 6, lines 33-61). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the battery test setting as taught by Parkinson et al. into the system as disclosed by Stump et al. because it would test the detection system has something wrong before it is operated.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stump et al. (U.S. Pat. 5,819,859) in view of Bashforth et al. (U.S. Pat. 5,499,029) as applied to claim 1 above, and further in view Ulrich (U.S. Pat. 3,916,298).

**Regarding to claim 24**, Stump et al. disclose the instant claimed invention except for the reset control. Ulrich teaches a reset switch (66) for resetting an audible alarm (70) for the immediately detected object (as shown in Figure 1; col. 4, lines 9-34). It would have been obvious to a person having ordinary skill in the art at the time the

invention was made to use the reset switch (66) as taught by Ulrich into the system as disclosed by Stump et al. because it can be used to initialize the alarm after it emits an alert signal.

11. Claims 27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stump et al. and Bashforth et al. as applied to claim 1 above, and further in view Archambeault et al. (U.S. Pat. 5,469,155).

**Regarding to claim 27**, Stump et al. disclose the instant claimed invention except for the wireless communicator for allowing wireless communication between the system and at least one distance database. Archambeault et al. teach a wireless communicator (26) with an antenna (28) for transmitting an information signal to a remote receiver (32, as shown in Figures 5-6; col. 3, lines 7-21). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the wireless communicator (26) for transmitting the information signal to a remote distant database (32 to indicate that a presence of an object is detected.

**Regarding claim 31**, the claimed method steps would have been inherent in the product structure as stated in claim 27 above.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Garber et al. (US 2002/0008623) and Frecska et al. (US 6,693,512).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tai T. Nguyen whose telephone number is (571) 272-2961. The examiner can normally be reached on Monday-Friday from 7:30am-5:00pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tai T. Nguyen', with a stylized, flowing script.

Tai T. Nguyen  
Examiner  
Art Unit 2632

March 17, 2005